FACILITY INSPECTION REPORT

Facility No:	M6-0493	**Fiscal Year:**	2010
Facility Name:	Industrial Area Support Building	**Inspection Date:**	01/10
Location:	Kennedy Space Center (KSC) Industrial Area	**Facility Owner:**	NASA
RPI CRV:	$3,817,105, as of 12/18/09	**Original Construction Date:**	1964
ISC Maintained Systems/Codes:	STR (SR & RO), EHV/AC, ELV (AC & FG), HVC/HV, MEC/M9, PSY (FA, SY & SC), WWS (SS, WA and WP)	**FCA Type:**	Refresh
Inspector(s):	Dan Smith, Howard England, Bill Chardavoyne and Justin Gilman		

A. Facility Mission/Description:

This 15,449 square foot facility is constructed of concrete block walls built on a raised concrete foundation with a built-up roof system (see Figure 1). The facility is divided into two parts, including a food storage/preparation area and an office/admin area. The facility was originally constructed as a cafeteria for KSC. Lackmann Culinary Services uses the east half of this facility for food storage and preparation required to supply the cafeterias located across KSC. The east half of this facility has a fully equipped industrial kitchen and includes industrial stoves, sinks, refrigerators and freezers. The west side of this facility (originally a dining room) consists of offices and administrative space utilized by ISC, SC Jones and Sierra Lobo contractor employees.

Figure 1. M6-0493 General View

B. Facility Manager Interview:

Nancy Carmichael, ISC, Maureen Legg, Lackmann Culinary Services, Facility Managers

Nancy Carmichael was interviewed for the inspection of the facility. The east half of the building containing food services was remodeled two years ago and is in excellent condition. The west half of the facility contains offices and cubicles and is in need of remodeling. The west half area is in fair condition. Extensive odors from mold permeate the west half. The source for these odors is believed to be from dampness in the crawlspace under the building. Roof leaks have been a recurring problem. A new roof is currently being installed with a completion date of Spring 2010.

Maureen Legg was also interviewed. She is facility manager for the east half of the facility. Her only concern was that her office (Room 1210A) was always warm.

C. Planned Facility/System Major Projects:

Roof is currently being replaced under PCN 98776. There are no major projects planned for this facility at this time.

D. Administrative Deficiency Recommendations:

a Real Property:

No deficiencies exist.

b OMEU:

No deficiencies exist.

c Maximo:

Table 1. Maximo Recommendations

System	Recommendations
PSY/FA	Update Maximo to indicate installation of new Siemens MXL-IQ FACP. Coordinated with SME Phil Smith
HVC/HV	Implement recommendations of Table 12 located under the HVC section.
HVC/HV	After completion of current roof replacement project, an exhaust fan inventory inspection should be conducted to update the Maximo equipment inventory.
PSY/SC	An Ansul R-102, wet chemical fire suppression system exists in the kitchen cooking area located on the east side of Facility M6-0493 (see Figure 11). This equipment should be added to Maximo with appropriate preventive maintenance. The OMEU assigns maintenance responsibility to ISC for the SC subsystem.
PSY/SY	A new wet pipe fire suppression system exists in Room 1220 located on the east side of the building. This equipment should be added to Maximo with appropriate preventive maintenance. The OMEU assigns maintenance responsibility to ISC for the SY subsystem.
WWS/WP	One Vulcan® scale blocker water filter system servicing the Lackmann Kitchen was identified in Room 1245. This equipment is not identified in the Maximo equipment inventory and should be added with preventive maintenance using Job Plan WWWC21Q.

E. Asbestos Containing Material (ACM) Analysis:

ACM was identified in the facility. The ACM data, including locations, pictures and conditions is available in AMIS (Asbestos Management Information System) http://amis.ksc.nasa.gov/. Homogeneous Area Identification (HMID), VM01 4" mudded fittings and PW01 Black sticky pipe wrap were previously abated during the east half renovation and AMIS was updated to

state the ACM was abated. Table 2 contains a summary of previously identified ACM along with recommended actions.

Table 2. ACM Data				
HMID#	**Description**	**Friable**	**Condition**	**Recommended Action:**
FT01	9" Peach Floor Tile	No	Good	No Action
MB01	Gray Building Seal	No	Good	No Action
MB02	White Building Seal	No	Good	No Action
MO08	Brake Pad (part)	No	Was Removed	Updated AMIS to reflect changes
VM01	4" Mudded Fittings	Yes	Was Removed	Updated AMIS to reflect changes

With the recent renovation of the east area (Lackmann Culinary Services area), new suspect materials (i.e. floor tiles, drywall system, ceiling tiles, duct mastic, etc.) were identified in the field and have not been sampled or identified as non-ACM. These materials are also not listed in AMIS. If disturbed, the materials should be treated as ACM until bulk sampling results or specifications from the manufacturer prove otherwise.

F. Indoor Air Quality (IAQ) Analysis:

In 2008 (Report T2008-2660) and in December 2009 (T200910-5138), an IAQ survey was performed on the west half of the facility by the Medical Environmental Services Contract (MESC), Industrial Hygiene Department. Most of the recommendations were implemented (changing HVAC filters, replacing water damaged ceiling tiles, and HEPA vacuuming the carpets). However, odor complaints are the most frequent occurrence for the west half of this facility. The ISC recently added a blower in the crawl space and added mineral oil to floor drains in restroom to mitigate the odors. This has reduced the odor within the facility.

G. Warranties and Service Agreements Analysis:

The new PENN® walk-in refrigeration coolers have a ten year manufacturer's warranty period for materials and workmanship under normal service and use. See document 87K00345 for details. All warranty documents related to PCN 98074 are listed on the cover page of 87K00345. These documents are available in KEDS.

H. Facility/Systems Condition Assessment:

STR/SR

Condition Code: 4 - GOOD

1. Research:

a General System Description:

The structural system consists of a concrete foundation, concrete block walls, interior chain link fencing, windows, staircases, a concrete handicap ramp, and two (2) loading docks. The interior of the west side (administrative and office space) of the facility is carpeted and the north and south walls consist entirely of large windows. The two entrances on the west side of the facility have small staircases leading up to sets of glass doors. There is also a handicap ramp at the southwest entrance to the facility. The interior of the east side (kitchen and food storage) of the facility has ceramic tile flooring for the kitchen area and small windows are below the ceiling north and south walls. There is also chain link

fencing in Room 1202. The fencing serves as secure storage for various food and drink products.

b Previous Facility/System Assessment Recommendations:

A Facility Condition Assessment (FCA) was conducted in 2004 on the structural system of this facility. Table 3 below contains the status of the recommendations from the previous FCA.

Table 3. Status of 2004 FCA Recommendations (STR)

2004 Recommendation	Status	Comments
Mold on the exterior walls and window ledge needs to be removed	Completed	Mold/mildew needs to removed again
Repaint exterior	Open	Exterior needs repainting
Structural cracks along the exterior ledge on the south side of the facility and cracks in the northwest staircase need to be filled to maintain structural integrity	Closed	Cracks filled on northeast stair. south side structural cracks not repaired
Corrosion on the vents and hinges on the mechanical room doors needs to be removed	Completed	Mechanical room doors have been replaced.
Windows on the north and south sides of the west side of the facility need to be re-caulked to prevent leaks	Completed	
Structural deficiencies identified on the east side of the facility will be addressed through major project PCN 98074	Completed	East side remodeled in 2008

c Interviews - Known Problems or Issues:

Doug Czerwinski, ISC, STR/SR Systems Maintenance Engineer

There are no known deficiencies with the structural systems and no preventive maintenance program is required for this facility.

Greg Hooper ISC, W/W Systems Maintenance Engineer

The facility has a crawl space under the elevated flooring. Lack of a insulating vapor barrier under the kitchen coolers has created an area in the crawl space under the coolers that shows signs of mold. Fans have been placed in the crawl space to reduce the mold growth.

d Existing Support Requests:

There are no existing support requests.

e Maintenance Trend Analysis:

The west half has had constant leaks appearing (See Figure 4). Installation of the new roof in Spring 2010 should eliminate these leaks. Pressure washing the exterior north wall to remove mold is needed every few years.

2. Site Inspection, Conclusions and Recommendations:

a Inspection Summary

The interior east side area is in excellent condition having undergone a complete remodeling two years ago. The west side administrative office area condition is in

fair condition. The painted exterior shows signs of wear. Mold/mildew is present along the north exterior wall (see Figure 2 and 3). Multiple hairline cracks have appeared on the exterior north and south ledges. Hairline cracks are also visible along the east and west vertical exterior pillars. Along the exterior north ledge rebar is visible in one place. There is a smell of mold at the northwest entrance. A new roof is currently being constructed.

Figure 2. Mildew/mold growth along Northeast side

Figure 3. Mildew Along Northwest Side - M6-493

Figure 4. Damaged Ceiling Tiles

b Conclusions/Recommendations

Facility is in good condition based on the average of the east and west halves. The west side is in excellent condition having been remodeled in 2008.The west offices side is in fair condition. Recommendations include; pressure washing the

exterior, paint the building exterior and on the west side, replace the damaged carpet and ceiling tiles where leaks have occurred.

3. Maintenance Program Analysis:

a Existing Preventive Maintenance Program

The existing maintenance program for the structural system is reactive. This type of program is suitable for this facility which has no structural components that requires preventive maintenance. There are no recommended changes to the current maintenance plan at this time.

b Predictive Technologies

No predictive technologies are used in the current reactive maintenance program.

STR/RO

Condition Code: 5 - EXCELLENT

1. Research:

a General System Description:

The facility roof is a built-up roof and is currently being replaced with a new roof. Sections have been repaired numerous times over the life of the facility. The roof is currently being replaced (Figure 5) with a completion date of Spring 2010.

b Previous Facility/System Assessment Recommendations:

Table 4. Previous STR/RO FCA Recommendations Status

2004 Recommendation	Status	Comments
Replace roof	In Work	

Interviews - Known Problems or Issues:

John Smith, ISC, STR/RO Systems Maintenance Engineer

There are no known deficiencies with the roofing system.

c Existing Support Requests:

There are no existing support requests.

d Maintenance Trend Analysis:

No changes are recommended to this maintenance plan.

2. Site Inspection, Conclusions and Recommendations:

a Inspection Summary

Access to the roof was not available due to roof replacement construction. Completion is set for Spring 2010.

Figure 5. Roof Construction - M6-493

b Conclusions/Recommendations

No Recommendations for this assessment.

3. Maintenance Program Analysis:

a Existing Preventive Maintenance Program

Preventive maintenance is to be performed on the built-up roof on a semi-annual basis per job plan BSR008SA. There are no recommended changes to the current maintenance plan at this time.

b Predictive Technologies

No predictive technologies are used in the current preventive maintenance program.

EHV/AC

Condition Code: 5 - EXCELLENT

1. Research:

a General System Description:

The EHV/AC system consists of Substation SS-157 (750KVA pad mount) feeding a main distribution panel.

b Previous Facility/System Assessment Recommendations:

A FCA was performed by Nelson Engineering Company in 2004. There were no recommendations from the previous FCA.

c Interviews - Known Problems or Issues:

Son Ho, ISC, EHV/AC System Maintenance Engineer (SME)

The EHV/AC system well maintained and in good working order. There are no known maintenance problems or open WON's.

d Existing Support Requests:

There are no open WON's or SR's for the EHV/AC system.

e Maintenance Trend Analysis:

Based on the analysis of the Maximo work orders submitted for this facility and personnel interviews, no maintenance trends were identified.

2. Site Inspection, Conclusions and Recommendations:

The substation is in like new condition.

3. Maintenance Program Analysis:

a Existing Preventive Maintenance Program

The existing maintenance program for the EHV/AC system is preventive. Recurring PMs are performed on the EHV/AC system as noted in Table 5 below. The current maintenance program is appropriate, per ISC, EHV/AC SME Son Ho.

Table 5. EHV/AC Maintenance Program Analysis

Equipment	PM Number	Job Plan	Frequency
C1E01001 (SS 157)	PM005010	PLTF11A3	Triennial

b Predictive Technologies

The work steps contained in the job plans and frequencies of inspection are appropriate. Predictive technologies are used in the job plans as noted in Table 6 and no changes are recommended.

Table 6. EHV/AC Predictive Testing and Inspection Tasks

Job Plan	Infrared Thermography Scan	Insulation Resistance Test (Megger®)	Three-Point Ground Test	Dielectric Absorption Test	Power Factor Test
PLTF11A3	X	X		X	X

ELV/AC

Condition Code: 4 - GOOD

1. Research:

a General System Description:

The low voltage system consists of emergency and exit lights, low voltage distribution equipment including transformers, panels, and disconnect switches. There is an automatic transfer switch in the southeast electrical room of this

facility. This switch is used to transfer the building power from utility power to generator power during a power outage. The backup generator for this facility is located in facility M6-0493C, Emergency Generator Building, located on the south side of this facility.

b Previous Facility/System Assessment Recommendations:

A FCA was performed by Nelson Engineering Company in 2004. There were no recommendations from the previous FCA.

c Interviews - Known Problems or Issues:

Jerome Blake, ISC, ELV/AC System Maintenance Engineer (SME)

The ELV/AC system well maintained and in good working order. There are no known maintenance problems.

d Existing Support Requests:

There are no open WON's or SR's for the ELV/AC system.

e Maintenance Trend Analysis:

Based on the analysis of the Maximo work orders submitted for this facility and personnel interviews, no maintenance trends were identified.

2. Site Inspection, Conclusions and Recommendations:

The ELV/AC system is in good condition.

- Several unsupported flex conduits are terminated on Panel CP-1 in Room 1198.

3. Maintenance Program Analysis:

a Existing Preventive Maintenance Program

The existing maintenance program for the ELV/AC system is preventive and reactive. Recurring PMs are performed on the ELV/AC system as noted in Table 7 below. The current maintenance program is appropriate, per ISC, ELV/AC SME Jerome Blake.

Table 7. ELV/AC Maintenance Program Analysis

Equipment	PM Number	Job Plan	Frequency
M6-0493ELVVL (Electrical Sub System)	PM022637	PLL183M PLL183A	Monthly Annually
CIE01036 (ATS 225 amp)	PM005031	PLE002A	Annually

b Predictive Technologies:

No predictive technologies are incorporated in the job plans for this system and no such tasks are deemed necessary based on the equipment operating contexts.

ELV/FG

Condition Code: 4 - GOOD

1. Research:

a General System Description:

Grounding system consists of copper grounding electrodes connected to a ground counterpoise at the substation. The facility is not equipped with a counterpoise system.

b Previous Facility/System Assessment Recommendations:

A FCA was performed by Nelson Engineering Company in 2004. There were no recommendations from the previous FCA.

c Interviews - Known Problems or Issues:

Jerome Blake, ISC, ELV/FG System Maintenance Engineer (SME)

The system is well maintained. There are no known problems.

d Maintenance Trend Analysis:

Based on the analysis of the Maximo work orders submitted for this facility and personnel interviews, no maintenance trends were identified.

2. Site Inspection, Conclusions and Recommendations:

The grounding system is not visible. There are no open WON's or known maintenance problems.

3. Maintenance Program Analysis:

a Existing Preventive Maintenance Program:

The existing maintenance program is preventive. Recurring preventive maintenance is performed as shown in Table 8. The PM frequencies and work steps contained in the job plans are appropriate. No changes are recommended at this time. The current maintenance program is appropriate, per ISC, ELV/FG SME Jerome Blake.

Table 8. ELV/FG Maintenance Program Analysis

Equipment	PM Number	Job Plan	Frequency
CIE90001 (Grounding System)	PM005032	BSG007A	Annually

b Predictive Technologies

The work steps contained in the job plans and frequencies of inspection are appropriate. Predictive technologies are used in the job plans as noted in Table 9 and no changes are recommended.

Table 9. ELV/FG Predictive Testing and Inspection Tasks

Job Plan	Infrared Thermography Scan	Insulation Resistance Test (Megger®)	Three-Point Ground Test	Dielectric Absorption Test	Power Factor Test
BSG007A			X		

HVC/HV

Condition Code: 4 - GOOD

1. Research:

a General System Description:

The heating, ventilation and air conditioning (HV) subsystem is split up into two main areas, an east side and west side. The east side of the building services the Lackmann Kitchen and the west side of the building is used as an administrative space for various NASA Contractors.

The entire HVC system on the east side of the facility was recently removed and replaced under Project PCN 98074. The current HVC system consists of: two AHUs, one air cooled chiller, one makeup water system, two cooler refrigeration condensers, one freezer refrigeration condenser, two walk-in coolers, one walk-in freezer, one ice machine, two chilled water pumps, three air curtains, numerous exhaust and makeup air fans, variable air volume (VAV) units, air distribution ductwork, and HVC controls. AHU-1 contains an electric duct heater to heat the Lackmann space

The existing HVC system servicing the west side of the facility was not affected by Project PCN 98074. This HVC system consists of: one outdoor air package unit, one return air AHU, one heat pump condenser, multiple exhaust fans, air distribution ductwork, and HVC controls.

Outdoor air is pre-cooled and dehumidified by the package unit on the west exterior of the building before mixing with return air conditioned by the ceiling mounted AHU in the west mechanical room. Supply air flows through ductwork to numerous ACCUtherm “therma-fusers” located throughout the space. The therma-fuser diffusers regulate the air flow entering a space via dampers mechanically actuated by thermal element thermostats on the unit. The above ceiling space on the west side of the building acts as a return air plenum for the AHU.

b Previous Facility/System Assessment Recommendations:

A FCA was performed by Nelson Engineering Company in 2004. Table 10 contains the status of previous FCA recommendations.

Table 10. Previous FCA Recommendations.

2004 FCA Recommendations	Status	Comments
The corrosion on the condenser on the west side of the facility needs to be removed and a rust inhibitor needs to be applied.	Not Required	Unit scheduled for replacement under WON E1045064.

c Interviews - Known Problems or Issues:

Nancy Carmichael, ISC, Facility Manager (West Side)

The air conditioning and heating system on the west side of the building is in fair condition and adequately supports the mission of the facility. Room 1103 is always very cold. No major deficiencies exist at this time with the HVC system.

Bill Lauer, Lackmann Culinary Services

The comfort cooling and refrigeration systems in the Lackmann area are brand new and function well. No deficiencies exist at this time.

Mareen Legg, Lackmann Culinary Services, Facility Manager (East Side)

The air conditioning and heating system on the west side of the building is in excellent condition, however, Room 1210A is always too warm. No major deficiencies exist at this time with the HVC system.

Mike Denyer, ISC, HVC System Maintenance Engineer

Overall the HVC system is in good condition and supports the current mission of the facility. No major deficiencies exist at this time.

d Existing WONs/Support Requests:

WON E1045064 – This WON is in place to replace the air conditioning condenser and air handler on the west side of the facility due to the age of the units. An existing 12.5 ton air conditioning unit from the HVAC storage yard will be used to replace the existing unit. The status of this work order is approved (APPR).

e Maintenance Trend Analysis:

Based on the analysis of the Maximo work orders submitted for this facility and personnel interviews, a maintenance trend of HVC repairs was identified. Most of the history trouble calls were for HVC equipment recently replaced by Project PCN 98074. Due to this, no action is recommended at this time.

2. Site Inspection, Conclusions and Recommendations:

The HVC system is in overall good condition for the facility. The HVC system on the east side of the building is in excellent condition and the system is in fair condition on the west side.

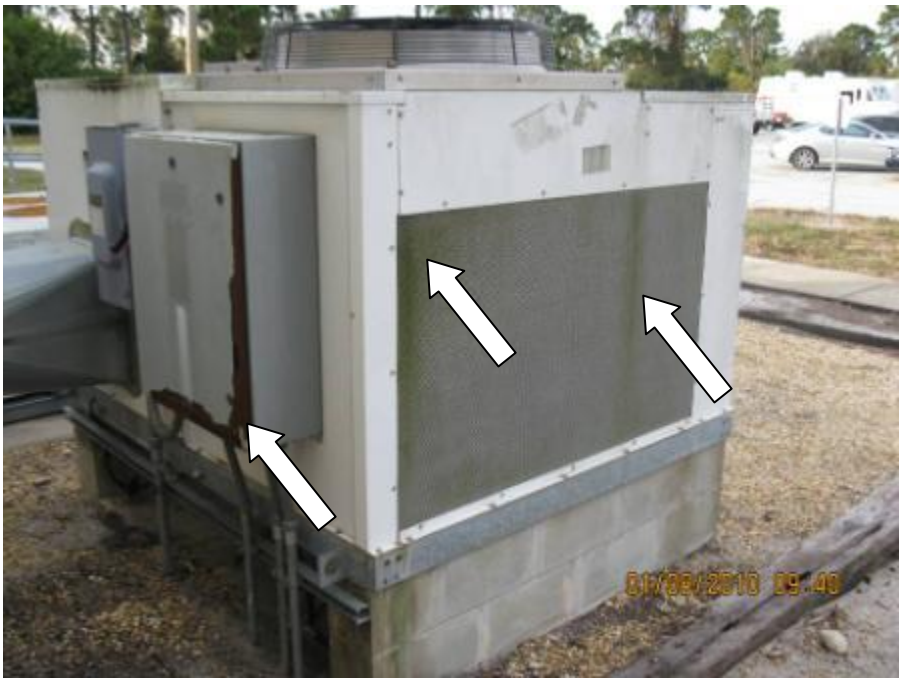
The Lackmann area HVC system is new and no HVC conditional deficiencies were identified or reported. Lackmann personnel occupying the east side report the HVC system works well and conditions the space adequately.

The HVC system on the west side of the facility is functional and its components range in age from 8 to 25 years old. The pad mounted condenser, interior ductwork, and primary AHU is 25 years old. The outdoor air package unit and associated ductwork is eight years old and was installed in an effort to reduce energy consumption at the facility. Facility occupants and the facility manager report the HVC system works adequately and supports the mission of the facility.

The following HVC system deficiencies and recommendations were identified:

- The condenser coils on the outdoor air package unit (Asset CIAIAUA001) have mildew growing on them and advanced corrosion exists on this unit's electrical/control box (see Figure 6). The condenser coils should be cleaned to remove mildew from the coils and the electrical/control box should be corrosion controlled and repainted to prevent premature deterioration.

Figure 6. Corrosion and Biological Growth on Package Unit



- The Trane heat pump condenser (Asset CIA02001) and AHU (Asset CIA02002) servicing the west side of the building are 25 years old and have exceeded their recommended service lives (see Figure 7 and 8). Replacement of these units is recommended to increase energy efficiency, reduce maintenance burden and to prevent frequent HVAC outages. This condenser and AHU will be replaced under active WON E1045064. The status of this work order is approved (APPR).

Figure 7. Aged Heat Pump Condenser Unit

Figure 8. Aged Air Handling Unit

3. Maintenance Program Analysis:

a Existing Preventive Maintenance Program

The existing HVC maintenance program is both reactive ("run to fail") and preventive. Select HVC exhaust fans and general air distribution ductwork maintenance programs are reactive. Recurring preventive maintenance is performed on the HVC system as shown in Table 11.

Table 11. HVC Maintenance Program Analysis

Equipment	PM Number	Job Plan	Frequency
YNA03031 (Refrigeration Unit)	PM017487	HVAC16SA	Semi-Annually
YNA03032 (Refrigeration Unit)	PM017488	HVAC16SA	Semi-Annually
CIA02002 (AHU-Trane)	PM005004	HVAC09M4 HVAC09A	Triennially Annually
CIA02001 (Condensing Unit)	PM005003	HVAC04M4 HVAC04A	Triennially Annually
CIAIAUA001 (Package Unit, OA)	PM029127	HVAC17M4 HVAC17A	Triennially Annually
CI101014 (Exhaust Fan)	PM004992	HVFB03SA	Semi-Annually
CI101002 (Exhaust Fan)	PM004989	HVFB03SA	Semi-Annually

The following Maximo and maintenance program deficiencies/recommendations were identified:

Table 12. HVC Maintenance Program and Maximo Deficiency Summary

Equipment & Asset #	Equipment Status	Sec. Loc.	Requested Maximo Action
Cooler Refrigeration Unit YNA03031	Eqp. Replaced under PCN 98074	South Ext.	Remove Eqp. & PM017487 Add New Eqp. w/ PM
Cooler Refrigeration Unit YNA03032	Eqp. Replaced under PCN 98074	South Ext.	Remove Eqp. & PM017488 Add New Eqp. w/ PM
Freezer Refrigeration Unit (No Asset #)	Added to Facility under PCN 98074	South Ext.	Add New Eqp. w/ PM
Air Cooled Water Chiller (No Asset #)	Added to Facility under PCN 98074	South Ext.	Add New Eqp. w/ PM
AHU-1 (No Asset #)	Added to Facility under PCN 98074	Mech Rm. 1245	Add New Eqp. w/ PM
AHU-2 (No Asset #)	Added to Facility under PCN 98074	Mech Rm. 1245	Add New Eqp. w/ PM
Chilled Water Pump 1 (No Asset #)	Added to Facility under PCN 98074	Mech Rm. 1245	Add New Eqp. w/ PM
Chilled Water Pump 2 (No Asset #)	Added to Facility under PCN 98074	Mech Rm. 1245	Add New Eqp. w/ PM
Air Curtain AC-1 (No Asset #)	Added to Facility under PCN 98074	Rm. 1234	Add New Eqp. No PM required.
Air Curtain AC-2 (No Asset #)	Added to Facility under PCN 98074	Rm. 1202	Add New Eqp. No PM required.
Air Curtain AC-3 (No Asset #)	Added to Facility under PCN 98074	Loading Dock Ent.	Add New Eqp. No PM required.
Ice Machine (No Asset #)	Added to Facility under PCN 98074	Kitchen	Add New Eqp. w/ PM
AHU Bard Hang on TRL (CIA03001-CIA03008)	No longer exists at Facility	N/A	Remove Eqp. From Inventory

AHU, Kenmore, 3 window units TRL 440 (CIA03009)	No longer exists at Facility	N/A	Remove Eqp. From Inventory
Steam Generator (CIH02001)	No longer exists at Facility	N/A	Remove Eqp. From Inventory
Refrigerator, Walk-in CI904010	Eqp. Replaced under PCN 98074	N/A	Remove Eqp. From Inventory Add Two Walk-in Coolers and One Walk-in Freezer Unit

Roof access during the FCA inspection was not available due to in-progress roof replacement construction work. After completion of current roof replacement project, an exhaust fan inventory inspection (HVC and MEC systems) should be conducted to update the Maximo equipment inventory. Many roof top exhaust fans were added, replaced or removed during Project PCN 98074. Roof top fans are used for: kitchen hood exhaust, dishwasher exhaust, make up air and general ventilation purposes. Preventive maintenance should be assigned to the fans per the direction of the ISC, HVC SME.

With the above exceptions, no changes are recommended at this time and the current maintenance program is appropriate, per ISC, HVC SME Mike Denyer.

b Predictive Technologies

No predictive technologies are incorporated in the job plans for the HVC system and none are recommended at this time.

MEC/M9

Condition Code: (M9: 3 - FAIR)

1. Research:

a General System Description:

The “other- mechanical systems” (M9) subsystem consists of one kitchen exhaust hood and multiple wall and roof mounted exhaust fans used for ventilation purposes.

b Previous Facility/System Assessment Recommendations:

A FCA was performed by Nelson Engineering Company in 2004. No remedial recommendations were made at that time.

c Interviews - Known Problems or Issues:

No interview required based on site inspection findings.

d Existing Support Requests:

No active support requests exist.

e Maintenance Trend Analysis:

Based on the analysis of the Maximo work orders submitted for this facility, no maintenance trends were identified.

2. Site Inspection, Conclusions and Recommendations:

The exhaust fans and kitchen exhaust hood appear fully operational and no major deficiencies were identified. See HVC section recommendation regarding updating the exhaust fan inventory for HVC and MEC systems.

3. Maintenance Program Analysis:

a Existing Preventive Maintenance Program

The existing MEC maintenance program is primarily reactive for the M9 subsystem. However, recurring preventive maintenance is performed on Kitchen Exhaust Hood H-1 (Asset CI104001) through Job Plan BSM020M. The current maintenance program, PM frequencies and work steps contained in the job plans are appropriate per ISC MEC SME Mike Denyer.

b Predictive Technologies

No predictive technologies exist or are recommended at this time for the MEC system.

PSY/FA

Condition Code: 5 - EXCELLENT

1. Research:

a General System Description:

The fire alarm system consists of a Siemens MXL-IQ fire alarm control panel (FACP), manual pull stations and speaker/strobes. The FACP is located in Room 1198.

b Previous Facility/System Assessment Recommendations:

A FCA was performed by Nelson Engineering Company in 2004. There were no recommendations from the previous FCA.

c Interviews - Known Problems or Issues:

Phil Smith, ISC, PSY/FA System Maintenance Engineer (SME)

The configured fire alarm system drawing is out of configuration. Documents have just been received to update the configuration drawings.

d Existing Support Requests:

No open WON's exist. There are no major projects programmed for the fire alarm system.

e Maintenance Trend Analysis:

Based on the analysis of the Maximo work orders submitted for this facility and personnel interviews, no maintenance trends were identified.

2. Site Inspection, Conclusions and Recommendations:

The PSY/FA system is in excellent condition. No deficiencies were noted.

3. Maintenance Program Analysis:

a Existing Preventive Maintenance Program

The existing maintenance program is preventive. Recurring preventive maintenance is performed and listed in Table 13. The PM frequencies and work steps contained in the job plans are appropriate. No changes are recommended

at this time. The current maintenance program is appropriate, per ISC, PSY/FA SME Phil Smith.

Table 13. PSY/FA Maintenance Program Analysis			
Equipment	**PM Number**	**Job Plan**	**Frequency**
CIF41001 (Siemens MXL-IQ FACP)	PM005037	PSA283A	Annually

b Predictive Technologies

No predictive technologies are incorporated in the job plans for this system and no such tasks are deemed necessary based on the equipment operating contexts.

PSY (SY, SC)

Condition Code: 5 - EXCELLENT (SY, SC)

1. Research:

a General System Description:

The PSY fire suppression subsystems at M6-0493 consist of a wet pipe sprinkler system (SY) and a wet chemical fire suppression system (SC) servicing the east side of the facility only.

The wet pipe sprinkler system consists of sprinkler piping and heads, a four inch riser in Room 1220, riser control valve, flow and tamper switches, pressure gauges, water gong, fire department connection point, and an inspector's test and drain. The riser also contains an expansion valve to support the future addition of a sprinkler system on the west side of the facility. The sprinkler system was installed in 2008.

Fire water is supplied to the sprinkler riser from a four inch supply line installed on the north side of the building. This four inch line is tapped off a twelve inch water main running parallel to Second Street. The fire water line is equipped with a dual check BFP.

An Ansul® R-102 wet chemical suppression system exists in the Lackmann kitchen area under Kitchen Hood H-1 (Asset CI104001). The system consists of a three gallon agent storage tank, cartridge, pressure regulator, valving, distribution piping and nozzles over the range, deep fat fryer, and ovens. A remote pull station exists next to the kitchen hood to manual activate the suppression system. When activated, this system shuts off the gas supply to the cooking equipment. A wet chemical suppression system has existed at M6-0493 for years, but was replaced with a new system in 2009.

The fire sprinkler and wet chemical subsystems at M6-0493 are configured systems. The wet chemical fire configuration drawing number is 98K03801. This drawing requires an update to reflect the new configuration of the system. A fire sprinkler configuration drawing does not exist yet for M6-0493 and should be created.

b Previous Facility/System Assessment Recommendations:

A FCA was performed by Nelson Engineering Company in 2004 on the PSY system. No remedial recommendations were made at that time.

c Interviews - Known Problems or Issues:

Bill Lauer for Facility Manager Mareen Legg, Lackmann Culinary Services (East Side)

The sprinkler system and wet chemical suppression systems in the Lackmann area are new and no known deficiencies exist at this time.

Al Studt, ISC, PSY Systems Maintenance Engineer

The wet pipe sprinkler and wet chemical suppression systems at M6-0493 are new and function properly. No deficiencies exist at this time. These systems were recently turned over to ISC and assignment of equipment numbers and preventive maintenance is in progress.

d Existing Support Requests:

No active support requests exist at this time.

e Maintenance Trend Analysis:

Based on the analysis of Maximo work orders submitted for this facility and personnel interviews, no maintenance trends were identified for the PSY (SY, SC) subsystems.

2. Site Inspection, Conclusions and Recommendations:

The wet pipe sprinkler and wet chemical fire suppression subsystems are new and in excellent condition. See the WWS section of this report for detailed information regarding the fire hydrants and fire backflow preventer (BFP).

The following PSY/SY subsystem deficiency and recommendation was identified:

- No identification sign exists on the FDC servicing the sprinkler system in the Lackmann area (see Figure 9). A hang tag or other appropriate identification markings should be installed to comply with NFPA Code. No other deficiencies were identified with the suppression system's components.

Figure 9. No Identification Sign or Markings on FDC

3. Maintenance Program Analysis:

a Existing Preventive Maintenance Program

The current fire suppression system maintenance program is reactive and is NOT is appropriate, per ISC, PSY SME Al Studt.

A new wet pipe fire suppression system exists in Room 1220 located on the east side of the building (see Figure 10). This equipment should be added to Maximo with appropriate preventive maintenance. The OMEU assigns maintenance responsibility to ISC for the SY subsystem. This system was recently turned over to ISC and assignment of equipment numbers and preventive maintenance is pending.

Figure 10. Wet Pipe Fire Suppression System Riser

An Ansul R-102, wet chemical fire suppression system exists in the kitchen cooking area located on the east side of Facility M6-0493 (see Figure 11). This equipment should be added to Maximo with appropriate preventive maintenance. The OMEU assigns maintenance responsibility to ISC for the SC subsystem.

Figure 11. Ansul Wet Chemical Fire Suppression System

b Predictive Technologies

No predictive technologies are incorporated in the job plans for these subsystems and none are recommended at this time.

WWS (SS, WA, WP)

Condition Code: 4-GOOD (SS, WA, WP)

1. Research:

a General System Description:

The WWS system consists of potable water (WP), water distribution (WA) and sanitary sewer (SS) subsystems.

The WP subsystem is composed of water supply distribution piping; restroom and kitchen fixtures; sinks; two 65 gallon, natural gas water heaters; one 40 gallon, electric water heater; one water fountain and a water filter.

The WA subsystem is comprised of two fire hydrants, one fire BFP, two potable water BFPs and related water distribution piping. Fire water is supplied to the sprinkler riser in Room 1220 from a four inch supply line installed on the north side of the building. This four inch line is tapped off a twelve inch water main running parallel to Second Street. The fire water line is equipped with a dual check BFP.

The SS subsystem consists of wastewater piping, vent stacks, floor drains, and a grease trap for the kitchen. All sanitary sewage waste leaves the facility via three sewer pipe laterals and enters the KSC sewer system at Manhole S-36. Two sewer lines service the east side of the building and another line services the west side. One sewer line on the east side of the facility is dedicated for kitchen wastewater only and is connected to a 750 gallon grease trap. The sewage lines outside the footprint of the building are cast iron and original.

b Previous Facility/System Assessment Recommendations:

A FCA was performed by Nelson Engineering Company in 2004. Table 14 contains the status of previous FCA recommendations.

Table 14. Previous FCA Recommendations.

2004 FCA Recommendations	Status	Comments
Add “confined space” sign to the wastewater pit on the north side of the facility	Complete	No further actions required
Perform corrosion control on drain cover in the janitor’s closet, Room 1120	Complete	No further actions required

c Interviews - Known Problems or Issues:

Bill Lauer for Facility Manager Mareen Legg, Lackmann Culinary Services (East Side)

The plumbing and sewer system in the Lackmann area is brand new and functions well. No deficiencies exist at this time.

Nancy Carmichael, ISC, Facility Manager (West Side)

The WWS system is in fair condition and adequately supports the mission of the facility. No major deficiencies exist at this time with the plumbing or sewer systems.

Greg Hooper, ISC, WWS System Maintenance Engineer

Overall, the WWS system is functioning acceptably and supports the mission of the facility. The system is in good condition overall.

d Existing Support Requests:

With the exception of routine maintenance and trouble calls, no active support requests exist.

e Maintenance Trend Analysis:

Since the entire WWS system on the east side of the facility was replaced in 2008, no maintenance trends were identified.

The west side of the building has a maintenance trend of WWS repairs and trouble calls. Toilets, urinals, sink fixtures and original plumbing lines frequently backup and require repair. Based on the age of the WWS system on the west side of the facility, this is a common deficiency and is corrected on a routine trouble call basis. Based on the advice of the WWS SME, no further actions are recommended at this time.

2. Site Inspection, Conclusions and Recommendations:

The WWS system is in overall good condition for the facility. The WWS system on the east side of the building is in excellent condition and the system is in fair condition on the west side.

The Lackmann area WWS system is new and no conditional deficiencies were identified or reported. Lackmann personnel occupying the east side report the WWS system works well and adequately supports the needs of the space.

The WWS system on the west side of the facility is in fair condition and functions properly. No major functional deficiencies were identified with the supply and wastewater piping, restroom fixtures, sinks and the water heater. The water pressure is sufficient and no evidence of major leaks, damage, or advanced corrosion was identified with the general plumbing components.

All backflow preventers are in good condition and are well maintained. The two fire hydrants are in satisfactory condition and are free of damage and major corrosion. All hydrants are labeled with metal asset number tags. The paint coatings adequately protect the substrates and no signs of leaks or damage was identified. Access to the fire hydrants are not restricted or blocked.

No remedial actions are recommended at this time. The general plumbing system's fixtures and components on the west side of the facility range in age from 5 to 46 years old. The sewage lines outside the footprint of the building are original.

3. Maintenance Program Analysis:

a Existing Preventive Maintenance Program

The existing WWS maintenance program is reactive and preventive. The general plumbing components, water fountain, water heaters and sanitary sewer piping maintenance programs are reactive. Recurring preventive maintenance is

performed as shown in Table 15. Unless noted otherwise, the PM frequencies and work steps contained in the job plans are appropriate.

Table 15. WWS Maintenance Program Analysis

Equipment	PM Number	Job Plan	Frequency
CI301001 (Food Service Grease Trap)	PM004994	WWWC19M	Monthly
CIS12001 (Fire BFP)	PM100453	WW0011A	Annually
CIS12002 (BFP)	PM100454	WW0011A	Annually
CIS12007 (BFP)	PM005047	WW0011A	Annually
CIFH1030 (Fire Hydrant)	PM005038	WW0071A	Annually
CIFH1290 (Fire Hydrant)	PM005039	WW0071A	Annually

The following WWS system maintenance program deficiency/recommendation was identified:

One Vulcan® scale blocker water filter system servicing the Lackmann Kitchen was identified in Room 1245. This equipment is not identified in the Maximo equipment inventory and should be added with preventive maintenance using Job Plan WWWC21Q.

With the above exception, no changes are recommended at this time and the current maintenance program is appropriate, per ISC, WWS SME Greg Hooper.

b Predictive Technologies

No predictive technologies are incorporated in the job plans for the WWS subsystems and none are recommended at this time.

I. Other Observations:

None.